

Spiny mouse (*Acomys cahirinus*): First menstruating rodent

Researchers at Hudson Institute have developed the first non-primate animal model that can be used to study menstruation and associated disorders.

Summary

Mechanisms underlying the pathogenesis of menstrual disorders are very poorly understood.

Pre-clinical gynecological and menstruating animal models are currently lacking. Spontaneous decidualisation and menstruation occurs in only 1.5% of mammalian species and has never been reported in rodents.

Following the observation of blood at the vaginal opening in female spiny mice (*Acomys cahirinus*) our researchers have determined and characterised the defining characteristics of menstruation in a rodent. The team have also sequenced and assembled the transcriptome of the spiny mouse, to characterise the genetics of this species.

The spiny mouse shares reproductive features with other menstruating mammals such as spontaneous decidualisation, hemochorial placentation, spontaneous ovulation and few, well-developed offspring). Furthermore, the spiny mouse also has a unique hormone profile more similar to humans.

The spiny mouse is the first rodent species known to menstruate and provides an unprecedented natural non-primate model to study the mechanisms of menstrual shedding and repair, and may be useful in furthering our understanding of human-specific menstrual and pregnancy-associated diseases.

Application

The spiny mouse provides an experimental species that can be used to further our understanding of human menstrual physiology and pathophysiology for use in basic research and drug discovery.

In particular, it is being developed as a model for conditions such as endometriosis, which affects ~170 million women worldwide, and is currently poorly understood and difficult to manage.

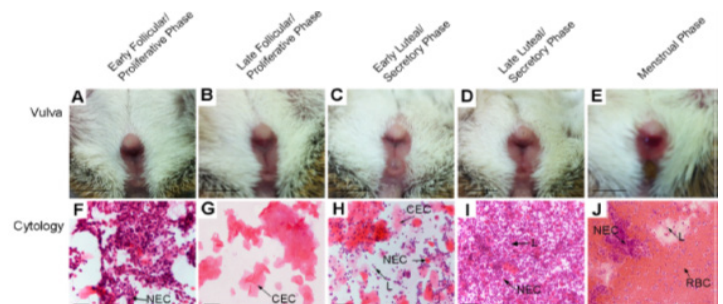
Other indications for which the spiny mouse would be relevant include uterine fibroids, IVF and polycystic ovary syndrome.



Advantages and research strengths

- World-leading expertise in spiny mouse research, including hormonal, reproductive and placental focus.
- Unprecedented natural non-primate model for drug discovery and screening for menstruation conditions and endometriosis.
- Experienced breeding, embryo manipulation and reproduction expertise.
- Access to complimentary spiny mouse gene and transcriptome dataset.

Key data



Changes in reproductive tract morphology and cytology across spiny mouse reproductive cycle.

Publications

Bellofiore et al. (2017) First evidence of a menstruating rodent: the spiny mouse (*Acomys cahirinus*). *Am J Obstet Gynecol* 216(1):40. e1

Bellofiore et al. (2017) The spiny mouse: a model for menstruation and reproductive ageing. *J Paediatr Child Health* 53(52):9.

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